

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/019473

A. CLASSIFICATION OF SUBJECT MATTER Int.Cl⁷ F16D3/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Int.Cl⁷ F16D3/22

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2005
Kokai Jitsuyo Shinan Koho 1971-2005 Toroku Jitsuyo Shinan Koho 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2003-130082 A (NTN Corp.), 08 May, 2003 (08.05.03), Claim 1; Fig. 1; Par. No. [0019]	1-10
Y	JP 9-317783 A (NTN Corp.), 09 December, 1997 (09.12.97), Table 1; Par. No. [0022]	1-7
Y	JP 2000-55069 A (NSK Ltd.), 22 February, 2000 (22.02.00), Column 8, lines 12 to 24	4
Y	JP 2002-13544 A (NTN Corp.), 18 January, 2002 (18.01.02), Par. No. [0011]; Claim 5	5-10

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
22 April, 2005 (22.04.05)

Date of mailing of the international search report
17 May, 2005 (17.05.05)

Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/019473

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 11-182569 A (NTN Corp.), 06 July, 1999 (06.07.99), Claim 1; Fig. 1	1-10
A	JP 9-177813 A (NTN Corp.), 11 July, 1997 (11.07.97), Claim 1; Fig. 1	1-10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/019473

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The "special technical feature" of claim 1 is that "the ratio $r_1 (= PCD_{BALL}/D_{BALL})$ between the pitch circle diameter (PCD_{BALL}) of balls and the diameter (D_{BALL}) of a ball is set in the range of $1.5 \leq r_1 \leq 4.0$," and the "special technical feature of claim 8 is that "a constant velocity universal joint where a ball track is open in a wedge-like manner in one of the axial directions, wherein a pocket of a retainer has a corner radius section and wherein the ratio (R/d) between the curvature radius R of the corner radius section and the diameter d of a torque transmission ball is $R/d \geq 0.22$." There is no technical relationship between these inventions involving one or more of the same or corresponding special technical features, (continued to extra sheet)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/019473

Continuation of Box No.III of continuation of first sheet(2)

and therefore, the inventions are not so linked as to form a single general inventive concept.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/JP2004/019473

JP 2003-130082	2003.05.08	US 2003/83135	2003.05.01
		FR 2831626 A1	2003.05.02
		CN 1414257 A	2003.04.30
JP 9-317783 A	1997.12.09	US 6120382 A	2000.09.19
		EP 802341 A1	1997.10.22
		US 6267682 B1	2001.07.31
		US 2002/32064 A1	2002.03.14
		EP 1209372 A2	2002.05.29
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		WO 1997/024538 A1	1997.07.10
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		AU 1171197 A	1997.07.28
		AU 714553 B	2000.01.06
		CN 1176683 A	1998.03.18
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		US 2001/21671 A1	2001.09.13
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		US 2001/24976 A1	2001.09.27
		EP 950824 A2	1999.10.20
JP 2002-13544 A	2002.01.18	US 2002/22528 A1	2002.02.21
		FR 2809146 A1	2001.11.23
JP 11-182569 A	1999.07.06	(Family: none)	
JP 9-177813 A	1997.07.11	US 5855519 A	1999.01.05
		DE 19653573 A1	1997.07.03